



# **49cc 4 STROKE MOTORIZED BICYCLE INSTALLATION MANUAL**



Congratulations! You have purchased one of the finest 4 stroke engine kits available to motorize your 26" V-Frame cruiser, road bike or mountain bike! This quality 4 stroke engine will provide many happy miles of trouble free riding if installed and maintained properly. Although we recommend professional installation, if you have at least average mechanical skills and a few hours time, you can install this kit and gain the satisfaction of doing it yourself. If you are not mechanically inclined or don't feel comfortable in installing it yourself, you can still enjoy hours of fun riding your motorized bike by asking your local bike shop to perform the installation for you.

Now, let's get started!

- 1) Carefully unpack all of the parts from your kit and lay them out on a flat surface. You should have the following parts in the kit.

- |  |   |
|--|---|
| 1. Quality 49cc 4 Stroke Huasheng Engine                                       | 12. Heavy Duty # 415 Chain                        |
| 2. Chrome Muffler with Gasket  | 13. Twist Grip Throttle with Built-In Kill Switch |
| 3. Gas tank , Plastic gasoline fuel line, Fuel valve                           | 14. Adjustable Throttle Cable                     |
| 4. Adjustable Chain Idler  |   |
| 5. 44 tooth 9 hole sprocket  |   |
| 6. Chain Guard   |   |
| 7. Extra Wide Crank/Sprocket   | * 4 Stroke printed installation Manual included.  |
| 8. Fiber sprocket mounting rings, 9 sprocket bolts, 3 metal retaining segments |   |
| 9. Engine Mounting Plate with Universal Mounting Brackets                      |   |
| 10. Spark Plug Wrench  |   |
| 11. Misc. Mounting Bolts with Nuts   |   |

Here is an interesting fact, or least an easy to believe opinion, about this generic 49cc 4-stroke engine. The engine is a clone of the Hua Sheng model 142F engine, and that Hua Sheng engine is a clone of the Honda GX50 engine. So, you have the clone-of-a-clone.



**HONDA**

A sticker for the U.S. EPA emission control information is on the engine.



**HuaSheng (TaiShan)**

A sticker for the U.S. EPA emission control information is on the engine, and it is different than on the Honda engine.



***generic***

NO stickers

1) Quality Huasheng 4  
Stroke Engine with  
Reducer



8) 3 Fiber sprocket mounting rings  
9 sprocket bolts  
3 metal retaining segments



2) Chrome Muffler With Gasket



9) Engine Mounting Plate With  
Universal Brackets (5ea)



3) Gas Tank With Gas Line and  
Petcock/Valve



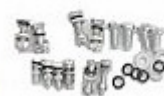
10) Spark Plug  
wrench



4) Adjustable Chain Idler



11) Misc. Nuts and Bolts



5) 44 Tooth 9 Hole  
Sprocket



12) Heavy Duty # 415  
Chain



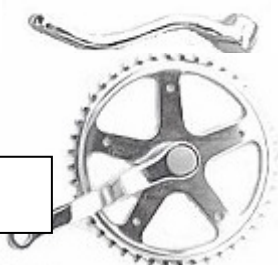
6) Chain Guard



13) Twist Grip Throttle with  
Built-In Kill Switch



7) Extra Wide  
Crank/Sprocket



14) Adjustable Throttle  
Cable



# **Tools and Materials Needed For Installation**

Before you begin installing your kit, you will need to gather some tools and materials.

(This list is not all inclusive, but under most circumstances will provide what you need to complete the project.)

## **Tools:**

Metric/Standard Allen Wrench Set  
Metric/Standard Open End Wrench Set  
Metric/Standard Socket Set  
Medium straight blade Screwdriver  
Medium Phillips Screwdriver  
Electric Hand Drill with assorted drill bits to 1/4"  
Tape Measure or Ruler  
Small level ( 10" )  
( A small die grinder or Dremel Tool may come in handy )  
Pencil And Felt Marker  
Small Funnel With Hose Attached

## **Materials:**

Loctite thread locker ( Blue Bottle )  
Small zip ties  
Teflon pipe tape  
Small engine in-line gas filter ( optional )  
Fuel Line Hose Clamps ( optional )  
Old inner tube rubber ( optional )

## **Will it fit my bicycle?**

This kit will fit most cruiser type bicycles and this manual is intended to address installation inside the center frame only and is not intended to be all inclusive. You will need about 14" from the top of the crank housing to the bottom of the top brace or bar to fit the engine and mounting plate into place. If the kit does not fit due to your frame design, rear mount kits are available from internet suppliers to mount it over the rear tire, although the bicycle will not handle as well as a center mounted engine would. You will want to install the wide crank set to allow the crank/pedals to clear the engine on each side as you pedal. This kit comes with a 3 piece wide crank. This can be used only if your bike has a 3 piece crank or if you purchase and install a 3 piece crank conversion, or you will need to purchase and install a wide one piece crank. For the purposes of this installation, we are using a Huffy Cranbrook cruiser type bicycle. It comes stock with a one piece crank as shown, ( We opted for the 3 piece conversion for our bike. )



## **Installing the Rear Sprocket**

Installation of the rear sprocket is pretty straight forward, but care needs to be taken to ensure the sprocket is centered on the hub/wheel and is aligned.

- 1) If you have a single speed bike with a coaster brake you will need to unbolt the brake arm from the frame and loosen the nuts on each side of the axle to remove the wheel from the bike. This part of the installation is easily done with the bike turned upside down on a piece of old carpet to keep from scratching the handle bars or the seat.



- 2) Place the wheel up on a table or workbench, remove the coaster brake arm and ( dry fit ) the sprocket over the left side of the wheel hub to make sure it will fit over the axle and hub as shown in the photos below. You may need to grind or file the inside hole of the sprocket to get it to fit onto some bikes. The preferred method would be to take it to a machine shop and have it cut out on a lathe.





**3) Prepare the sprocket** for installation by gathering the 9 bolts provided with the sprocket and thread them through the sprocket. ( The dished side of the sprocket normally goes toward the wheel ) Place one of the rubber gaskets provided over the threaded end of the bolts on the opposite side of the sprocket. Cut between two of the holes on the other rubber gasket ( if not already cut ) and place it over the axle on the inside of the spokes and align it with the bolts on the sprocket as shown then place the 3 metal retaining segments over the bolts, sandwiching the sprocket, rubber gaskets and segments over the spokes. Place a drop of the “medium” Loctite over each bolt thread and hand tighten the nuts with washers provided. Remember : Sprocket, rubber, spokes, rubber, metal retainer pieces. In that order.....

( See Photos on Next Page )



Remember, the “dished” side typically goes toward the spokes or the wheel, but can be reversed if needed to allow alignment of the chain and sprockets.

4) **Before tightening the sprocket** bolts, it is critical to make sure is the sprocket is centered in the wheel. This is usually easy to do because the center hole should line up with the center of the hub.

5) **NOTE** *“Proper alignment of the engine and sprocket will have beneficial effects on the balance, vibration dampening and ultimate power of your ride. All the other parts of the kit will fit wherever your particular setup allows”.*

6) **To align the sprocket**, start out by tightening each nut evenly across from each other till you have been around to each one several times and each one is tight. Once you place the wheel back on the bike and snug the axle bolts, spin the wheel with the chain removed.

There should be less than 1/16 of an inch difference in the measurement as you turn the wheel. A quick check is to place a pencil as shown while spinning the wheel and move the pencil closer and closer to the sprocket till it begins to touch as to mark the “high side” of the sprocket. ( See Next Photo )





Once you have identified the “high side” if any, tighten the bolts at that point slightly tighter. You may need to slightly loosen the bolts on the opposite side. Continue this process till all the bolts are tight and the sprocket is aligned.

**7) Changing the Crank:** Due to the width of the 4 stroke engine and gear box , you will likely need to change the original crank to the extra wide one provided in the kit to keep the pedals from hitting the engine. You will need to remove the pedals from the bike to re-use later. The left side pedal is removed by turning it *clockwise* and the right side pedal is removed by turning it *counter-clockwise*. As mentioned before, if your bike already has a 3 piece crank set, you can simply remove the two arms and replace them with the ones provided in the kit then re-install your pedals on the new arms ( may require pedal adaptors or new 9/16 pedals ). If your bike has a one piece crank, you will need to purchase and install a 3 piece crank conversion or a wide one piece crank as shown in the next photos.

Three piece cranks require 9/16” pedal studs where the one piece cranks use 1/2” studs.



3 Piece Crank Conversion Kit



1 Piece Crank Conversion Kit



**8) Re-Install the Wheel** : Once you have completed the sprocket installation and the wheel spins freely without rubbing, go ahead and place/adjust the chain on the right side ( pedal chain ) and remember to fasten the coaster brake arm if you have one. Be sure to finish tightening the axle nuts once you have adjusted the chain.

**9) Installing the Engine Mount:** Locate the engine mounting plate from the kit and fit it into the “V” opening of the frame. The plate should be located as low as possible in the frame without interfering with the right side



sprocket or chain guard. Install the mount as level as possible. Using the universal mounting brackets and bolts provided, clamp the mount securely to the frame. An optional step is to take some inner tube rubber and place around the frame prior to this step as it serves to keep the frame from being scratched.



The mounting plate is adjustable in length, but in some cases, the frame opening may be wider than the mounting plate. If this is the case, spacers may be required along with longer bolts to make the mount fit securely into the frame as shown. Make sure to use the Locktite compound on the mounting bolts to prevent it from vibrating loose. ( All bike models will be different and you may need to make some adjustments to gain the proper engine mounting fit. )

- 10) Mounting the Engine:** To Mount the engine on the frame, set the engine on the mounting with the speed reducer on the left side of the bike. (same side as the rear sprocket). Place Locktite on the 4 Allen head mounting bolts provided along with flat and lock washer from under the



mounting plate and thread into engine base. Do not tighten all the way at this time.

- 11) Once the engine is in place**, locate the heavy duty # 415 chain from the kit and place it around the rear sprocket and the output sprocket of the engine speed reducer. Hold the 2 ends of the chain together and “measure” it so that there is just enough slack in the chain to let you slip the chain off the rear sprocket without removing the rear wheel. Mark the spot on the chain where it needs to be cut.



This can be done with a “chain breaker tool” or by punching out one of the pins with a punch and hammer. *Once you have the chain to the proper length, it is a good idea to take a measurement of the chain and write it down so that if you need to replace it later, you can have the new one cut to size.* After you replace the chain back on each sprocket, place the repair link “master link” in from the right ( inside) side of the chain and the keeper clip on the left side ( outside ) with the closed end facing the direction the chain will move as shown in the photo.

- 12) Aligning the Chain** : In order to avoid undue wear of the sprockets and chain, and the chain from jumping off, the front output sprocket must be in alignment with the rear wheel sprocket. Once the master link installed and



the chain is on both sprockets, stand the bike straight up and down and look at the chain from the



rear of the bike. Both sprockets should be in line with each other and the chain should be straight between the two sprockets. If they are not in alignment, slide the motor from side to side until they are aligned and the chain is straight. In the unlikely event alignment can't be obtained, you may need to go back and reverse the engine mount or rear sprocket to shift the engine further to one side or the other. At this time, finish tightening the engine mounting bolts. Again, be sure that Locktite is on the threads so they don't work loose.

**13) Install the Chain Tensioner/Idler:** Locate the chain



idler from the kit. On most cruiser type bikes, it is mounted on the chain stay as shown in the photo. The tensioner/idler is mounted on the outside of the chain as shown in the photo and should

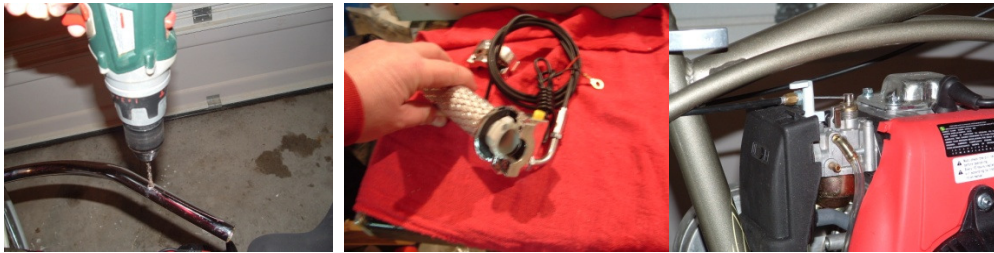
be adjusted so that there is no more than 1 inch of deflection in the chain when pushing it up or down between the seat tube of the frame and the rear wheel.

**14) After the idler is installed:** Once again spin the rear wheel and make sure the chain travels freely and does not bind or slip off either sprocket. You may even wish to take a short test ride under peddle power to make sure everything is tracking properly prior to making the rest of the installation. Adjust idler or alignment as needed. Some find it necessary to slightly file or grind the sharp edges from the drive sprocket to allow the chain to move over it smoothly. At this time you can install the chain guard if you wish. This also may take some slight



adjustments to fit your style of bicycle.

**15) Throttle/Kill Switch and Left hand grip:** Remove the original hand grips and slide the left side hand grip onto the handle bar. Take the mounting screws loose from the throttle and place the bottom half onto the bottom side of the handle bars. Mark the position where the locking stud goes into the handle bar and drill a 1/4" hole in the top of the handle bar as shown in the photo below.



Then thread the cable through the slot on the twist grip. Place the top of the assembly back on and tighten the screws. Route the throttle cable and kill switch wire along the bottom of the cross bar and down to the engine and secure with small cable ties. Make sure there are no sharp bends or turns that would cause the cable to bind or stick. Also check to make sure there is enough play in the cable to allow the handle bars to turn freely. Place the end of the cable into the throttle arm on top of the carburetor and slide the outer cable jacket into the fixed arm and secure. Make sure the throttle turns smoothly. Cut the plastic plug from the end of the kill switch wires coming from the engine and splice them to the ones from the kill switch with insulated butt splices.

## **16) Gas Tank Installation:**



You may wish to place some rubber such as inner tube material over the top cross bar where the gas tank will



sit to keep from scratching the frame or slipping. Make sure the inside of the tank is free of any dirt or other debris. Place the tank back from the handle bars far enough so they don't hit the tank when turning. Secure the tank with the brackets and bolts provided. Take care not to pinch the throttle cable or the wire from the kill switch.

Use Teflon tape on the gas valve and carefully thread it into the gas tank. Do not cross thread! Although optional, it's a good idea to purchase an in-line fuel filter and install it in the fuel line as you run it from the valve to the engine. Route the line from the gas valve to the engine carburetor taking care to keep the line tucked back out of the way so that it does not get pulled. It's a good idea to place small hose clamps on each end of the fuel line at the valve and at the carburetor.

### **17) Installing the Exhaust/Muffler:**

The muffler is bolted to the engine using the 2 bolts provided with the engine and utilizing the 2 gaskets and the heat shield. Use care not to over tighten these bolts! The exhaust pipe may need some minor adjustment in order to fit your particular bicycle. This can be



done by placing the pipe in a vice and heating it to a "cherry red" at the point you wish to bend it. Care should be taken to prevent pinching the pipe or breaking it.



Adjustments should be made a little at a time. Utilize the provided clamp to secure the lower part of the muffler to

the frame of the bicycle. Do not allow the muffler to be supported entirely by the 2 flange bolts in the engine!

**18) IMPORTANT : ENGINE OIL:** This engine is shipped without oil in the crank case. You will



need to fill the crank case with high detergent SAE 10w30 weight oil ( per engine instructions ). This will take approximately 8 ½ ounces. Do not attempt to run the engine without oil!

Use your funnel with a short piece of clear hose attached to fill the crank case. The funnel and hose can be purchased at a very low cost from your local home center.

**19) Congratulations!** You have now completed the installation of the kit. Go back and inspect each component again and make sure everything is tight and all of the bolts have Loctite on them so they don't come loose. Give the bike another short test ride under pedal power and make sure the chain stays on and there are no unusual noises or vibrations.

**20) Fenders:** Many of the fenders on department store bikes will not hold up to the vibrations caused by a powered bicycle. It is recommended that these fenders be removed prior to operating the bike under power. If one comes loose or breaks during operation, it can cause serious injury. Some suppliers offer heavy duty fenders with extra supports and may be installed, but remember to use the Loctite!

**21) Gas up!** Remember that this is a 4 stroke engine just like your car and does not require oil mixed with the gas! Damage can occur if you use



gas intended for a 2 cycle engine! Initially fill the tank about  $\frac{1}{4}$  full of fresh regular gasoline. Open the fuel valve and check for leaks around the fuel valve, hose and carburetor. Make sure gas is flowing through the fuel line.

**22)** Turn the engine choke to the “on” position and give the starter rope a firm steady pull. You should not need to pull the rope out of the recoil starter all the way to get the engine to start. It may take a few tries to get gasoline through the carburetor and into the engine the first time around. Once the engine fires or starts, you may need to back the choke off to the  $\frac{1}{2}$  way point till the engine warms up a bit, and then take it completely open.

**23) Optional upgrades for your bike:** Since this 4 stroke engine is started by hand, heavy duty free wheel axle kits can provide an extra margin of safety especially when combined with a band brake kit. It is strongly recommended that you install a brake on the front wheel if your bike does not already have one. Braking power is required when running at higher speeds.



**Disclaimer**

Riding a bicycle or a vehicle with an engine as power assist can be a hazardous activity. Certain conditions may cause the equipment to fail without fault of the manufacturer or seller. Rider is responsible for all safety procedures while operating a gas assisted vehicle. Like other vehicles, a gas assisted bicycle is intended to move, and it is therefore possible to lose control, fall off and/or get into dangerous situations that no amount of care, instruction or expertise can eliminate. If such things occur you can be seriously injured or die, even when using safety equipment and other precautions. RIDE AT YOUR OWN RISK AND USE COMMON SENSE. Keep the vehicle away from small children and remember that this product is intended for use only by persons who are, at a minimum, completely comfortable and competent while operating the vehicle. Rider is responsible for obeying possible rules and regulations of the local state while operating a gas assisted vehicle. Some states might require license, registration, and insurance to ride a gas assisted vehicle; it is rider's responsibility to find out and abide to above rules and regulations.